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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/035,168	01/04/2002	Burkhard Standke	211599US0	1767
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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.				
1940 DUKE STREET				
ALEXANDRIA, VA 22314				
EXAMINER				
FEELY, MICHAEL J				
ART UNIT		PAPER NUMBER		
1712				

DATE MAILED: 01/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/035,168

Applicant(s)

STANDKE ET AL.

Examiner

Michael J Feely

Art Unit

1712

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20-32 is/are allowed.
- 6) ☒ Claim(s) 1,4-19,33-35 is/are rejected.
- 7) ☒ Claim(s) 15 and 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☒ Interview Summary (PTO-413) Paper No(s). 1203.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Pending Claims

1. Claims 1 and 4-35 are pending.

Specification

2. On page 7 (lines 2-8) and page 9 (lines 21-22) of the disclosure, Applicant has incorporated a number of foreign references into the specification. This is improper, and this language should be removed from the specification.

Claim Objections

3. The objection to claim 10 has been overcome by amendment.
4. Claims 15 and 31 are objected to because of the following informalities: a composition is not considered a type of substrate. The term substrate implies some physical structure. Although a composition can be used to form a substrate, a composition cannot itself be a substrate. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
6. The previous rejection of claims 6 and 7 has been overcome by amendment.
7. Claims 1 and 4-19 rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are:

Claim 1 states that silicon compound A is crosslinked with itself by UV radiation; however, there is no indication that silicon compound A contains a functional group that is

capable of crosslinking by UV radiation. The requirements for silicon compound A include, "at least one organofunctional group and at least one hydrolyzable group," (chloro, alkoxy, carboxy, or hydroxyl). Based on the specification and the drawings, notably Figure 2, silicon compound A must have at least two organofunctional groups: at least one capable of bonding to the organofunctional substrate, and at least one capable of engaging in a crosslinking reaction that is initiated by UV radiation.

The way the claim is written, it is also not clear whether the crosslinking takes place before application of silicon compound A, or after application of silicon compound A to the organofunctional substrate. Based on the specification and Figure 2, it is clear that the silicon compound A is anchored to the substrate, and the remaining reactive groups are subsequently crosslinked.

The following is a suggested change for claim 1:

1. A process for modifying the surface of an organofunctional substrate comprising the steps of:
 - a) applying a silicon compound A to the surface of an organofunctional substrate, wherein said silicon compound A is a monomer or an oligomer, comprises at least two organofunctional groups, and comprises at least one hydrolyzable group selected from the group consisting of chloro, alkoxy, carboxy, and hydroxyl; wherein at least one of said organofunctional groups is capable of undergoing a crosslinking reaction upon exposure to UV radiation; and wherein silicon compound A is capable of forming a polymer bearing a silyl group;

b) reacting an organofunctional group of silicon compound A with the surface of an organofunctional substrate to form a polar treated surface, wherein the polar treated surface features a plurality of individual monomers or oligomers of silicon compound A bound to the substrate, and wherein said bound individual monomers or oligomers comprise at least one organofunctional group capable of undergoing a crosslinking reaction upon exposure to UV radiation.

c) exposing said bound individual monomers or oligomers to UV radiation to initiate crosslinking between the individual monomers or oligomers bound to the substrate; and

d) applying a silicon compound B to the polar treated surface, said silicon compound B comprises at least one organofunctional group and at least one hydrolyzable group selected from the group consisting of chloro, alkoxy, carboxy, and hydroxyl; wherein silicon compound B may be the same or different from silicon compound A;

e) reacting silicon compound B with the polar treated surface.

**Claims 4, 5 and 13 will have to be modified as well. Claims 4 and 5 introduce limitations regarding "the organofunctional group of silicon compound A". These claims need to distinguish between the different organofunctional groups set forth in claim 1. Claim 13 also needs to address the UV crosslinkable groups of silicon compound A and distinguish these groups from the other organofunctional groups.

Claims 4-19 are rejected because they depend from claim 1.

8. Claims 13 and 29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 13 and 29 recite the limitation "each alkylene group" in the processes of claims 1 and 20. There is insufficient antecedent basis for this limitation in the claim. There is no previous mention of alkylene groups.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. The rejection of claims 1, 4, 8, and 13-18 under 35 U.S.C. 102(b) as being anticipated by Ogawa et al. (US Pat. No. 5,225,274) has been overcome by amendment.

11. The rejection of claims 1, 2, 4-9, 12-15, 17, and 18 under 35 U.S.C. 102(b) as being anticipated by Yoneda et al. (US Pat. No. 5,576,109) has been overcome by amendment.

12. The rejection of claims 1, 2, 4-9, and 13-19 under 35 U.S.C. 102(b) as being anticipated by Ikenaga et al. (US Pat. No. 6,165,619) has been overcome by amendment.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. The rejection of claims 10 and 11 under 35 U.S.C. 103(a) as being unpatentable over Ikenaga et al. (US Pat. No. 6,165,619) has been overcome by amendment.

Claim Rejections - 35 USC § 102/103

15. Claims 33 and 34 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yoneda et al. (US Pat. No. 5,576,109) or Ikenaga et al. (US Pat. No. 6,165,619).

Yoneda et al. disclose: a surface-modified substrate (column 31, lines 1-22) and a product (column 30, lines 28-60) *produced by a process for modifying the surface of an organofunctional substrate comprising:* reacting an organofunctional group of a silicon compound A with the surface of an organofunctional substrate to form a polar treated surface (column 20, lines 17-25; column 22, lines 24-53), wherein the silicon compound A comprises at least one organofunctional group and at least one chloro, alkoxy, carboxy or hydroxyl group, and further wherein said silicon compound A may react to form a polymer bearing silyl groups (column 22, lines 24-53); then applying to the polar treated surface an organofunctional silicon compound B (column 20, lines 17-25; column 2, lines 34-49), wherein the silicon compound A and B may be identical or different, the silicon compound B bears at least one chloro, alkoxy, carboxy, or hydroxyl group, and the silicon compound B reacts with the polar treated surface (column 2, lines 34-49); wherein the organofunctional group of the silicon compound A is reacted with the surface of the organofunctional substrate by addition of an acid or base and solvent (column 22, lines 7-16).

Ikenaga et al. disclose: a surface-modified substrate (column 18, lines 32-36) and a product (column 4, lines 5-20; column 18, lines 32-36) *produced by a process for modifying the*

surface of an organofunctional substrate comprising: reacting an organofunctional group of a silicon compound A with the surface of an organofunctional substrate to form a polar treated surface (column 2, lines 28-52; column 2, line 52 through column 3, line 33), wherein the silicon compound A comprises at least one organofunctional group and at least one chloro, alkoxy, carboxy or hydroxyl group (column 2, lines 52-67), and further wherein said silicon compound A may react to form a polymer bearing silyl groups; then applying to the polar treated surface an organofunctional silicon compound B (column 2, lines 28-52; column 2, line 52 through column 3, line 55), wherein the silicon compound A and B may be identical or different, the silicon compound B bears at least one chloro, alkoxy, carboxy, or hydroxyl group, and the silicon compound B reacts with the polar treated surface (column 2, lines 41-43 and 48-51; column 2, line 52 through column 3, line 55); wherein the organofunctional group of the silicon compound A is reacted with the surface of the organofunctional substrate by addition of an acid or base (column 9, lines 59-67).

Neither of these reference disclose that the organofunctional group of silicon compound A is reacted with the surface of the organofunctional substrate by the addition of an acid or base *and in the presence of a free radical generator*; however, this is a product-by-process limitation.

It has been found that, "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process" – *In re Thorpe*, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Regardless of whether the free radical

generator is present during this reaction step, the final product results in a silicon compound A bound to the surface of the organofunctional substrate. Therefore, the final products of Yoneda et al. and Ikenaga et al. would have inherently anticipated or would have been an obvious variation of the claimed invention.

16. Claim 35 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ikenaga et al. (US Pat. No. 6,165,619).

Regarding claims 35, Ikenaga et al. are as set forth above and incorporated herein. Ikenaga et al. disclose a process for repelling water, oil, dirt, dust, paint, microorganisms or bacteria comprising incorporating a substrate obtained by the process as claimed in claim 20 as a coating on an article (column 19, lines 2-12).

Allowable Subject Matter

17. Claims 20-32 are allowed.

18. Claims 1 and 4-19 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

19. The following is a statement of reasons for the indication of allowable subject matter:
Claims 1 and 4-19:

Applicant has amended independent claim 1 to incorporate the concepts of dependent claims 2 and 3 into the independent claim. This is allowable for the reasons set forth in the previous Office action. Product-by-process claims 17 and 18, and process claim 19 are allowable because the prior art of record fails to teach or suggest a coated article having the crosslinked layer provided by the process of claim 1. Although the silane compound A is

bonded to the surface of the substrate, there is no teaching or suggestion that these silane compounds are crosslinked with each other through UV-crosslinkable organofunctional groups.

Claims 20-32:

The prior art fails to teach or suggest the method set forth in independent claim 20, wherein the organofunctional group of the silicon compound A is reacted with the surface of the organofunctional substrate by addition of an acid or base *and in the presence of a free radical generator*. The prior art of record teaches the use of acids/bases and solvents; however, the art is silent regarding the presence of a free radical generator during this bonding/reaction step.


Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J Feely whose telephone number is 571-272-1086. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Michael J. Feely
Patent Examiner
Art Unit 1712


PHILIP TUCKER
PRIMARY EXAMINER
ART UNIT 1712

December 23, 2003